y

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,058	12/13/2001	Mingxian Huang	ART-00106.P.1.1	5669

24232 7590 07/29/2005

DAVID R PRESTON & ASSOCIATES APC
12625 HIGH BLUFF DRIVE
SUITE 205
SAN DIEGO, CA 92130

EXAMINER	
LAM, ANN Y	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/022,058	HUANG ET AL.	
	Examiner	Art Unit	
	Ann Y. Lam	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *36-94* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☒ Claim(s) *26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

S.O.O

DETAILED ACTION

Claim Objections

Claim 26 is objected to because of the following informalities: "comprises" should be –comprise--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pourahmadi et al., 6,440,725, in view of Foster, 5,485,277.

Pourahmadi et al. discloses the invention substantially as claimed, except for the coating film comprising a particulate particle.

Pourahmadi et al. discloses the invention substantially as follows. Pourahmadi et al. discloses a platform comprising:

a surface (i.e., surfaces of chamber 26, e.g., 22 or 24, see col. 24, lines 57-58) (or alternatively, 88);

a coating film (i.e., coating of a substance, such as polymers, having high binding affinity with a target analyte, col. 24, lines 59-63);

a channel structure (26, see fig. 6, and col. 24, line 58);

wherein said coating film defines in part said channel structure (26, see fig. 6, and col. 24, line 58;

wherein said platform comprises a microchip (col. 2, lines 58-63).

As to claim 2, the surface (e.g., 22 or 24) comprise at least in part glass or polymer (col. 22, line 53).

As to claim 3, the surface comprises an acoustic element (i.e., ultrasonic transducer, 88, col. 33, lines 57-58.)

As to claim 6, the coating film comprises a polymer (col. 24, line 61.)

As to claim 7, the coating film comprises a hydrophobic polymer or a hydrophilic polymer (col. 24, line 62).

As to claim 9, the coating film is biocompatible (col. 24, lines 59-60).

As to claim 12, the coating film comprises at least in part a biological group (e.g., nucleic acid, col. 25, lines 21-22).

As to claim13, the biological group is a nucleic acid (col. 25, lines 21-22).

As to claim 14, the biological group (i.e., nucleic acid, col. 25, lines 21-22) is capable of interacting with a biological moiety or chemical moiety by electrostatic interactions, ionic interactions, hydrogen boding or hydrophobic interactions (col. 25, lines 21-22).

As to claim 15, the biological group interacts with a biological moiety by nucleic acid-nucleic acid interactions (col. 25, lines 21.22).

As to claims 16 and 20, the biological group is present substantially throughout said coating film or on the surface of said coating film (col. 25, lines 21-22).

As to claim 17, the coating film comprises at least in part a chemical group (col. 25, lines 21-22).

As to claim 18, the chemical group comprises at least in part an alkyl group, a charged group, or small molecules or combinations thereof (col. 25, lines 21-22.)

As to claim 19, the chemical group (i.e., nucleic acid, col. 25, lines 21-22, or alternatively, antibody, see col. 17, line 39) is capable of interacting with a chemical moiety or biological moiety by electrostatic interactions, ionic interactions, hydrogen bonding, hydrophobic interactions or covalent linking.

As to claim 28, the channel structure (26) comprise open channels or closed channels (see fig. 6.)

As to claim 29, at least a portion of said channel structure (26) is defined by said surface (22, see fig. 6).

As to claim 30, at least a portion of said channel structure is defined by said coating film (col. 24, lines 58-60).

As to claim 32, the channel structures (26) form at least one island (see fig. 6).

As to claim 33, said channel structure (26) has a shape in cross section that is substantially rectangular (see fig. 6.)

As to claim 34, the channel structure is linear (see fig. 6.)

As to claim 35, the device further comprises an acoustic element (i.e., ultrasonic transducer, 88, col. 33, lines 57-58), or magnetic element (i.e., magnetic beads (col. 18, line 43.)

Pourahmadi et al. teaches that an antibody (col. 17, line 39) or nucleic acid (col. 25, lines 21-22) can be immobilized on the polymer support for binding to an analyte (col. 24, lines 59-61). However, Pourahmadi et al. does not teach that the coating film comprises a particulate particle. The teachings of Pourahmadi et al. in combination with Foster however teaches a coating film comprising a particle.

Foster teaches that a cross-linked polymer film of polyvinyl alcohol can be used to immobilize ligands such as antibodies and nucleic acids for diagnostic assay purposes (col. 12, line 5-21.) Foster teaches that such polymers provide the advantage of containing a large amount of water, and are soft and bioinert (col. 12, lines 6-7.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a cross-linked polymer, such as cross-linked polyvinyl alcohol, as taught by Foster, as the polymer substrate generally taught by Pourahmadi et al. because Foster teaches that such a polymer provides the advantage of containing a large amount of water, and are soft and bioinert, as would be desirable for immobilizing ligands, such as antibodies and nucleic acids, for binding to an analyte.

Thus, with respect to claims 1 and 21, the cross-linked polymer disclosed by Foster comprises a particle imbedded in the coating film as claimed by Applicant.

As to claim 8, the coating film comprises polyvinyl alcohol (col. 12, line 8.)

As to claim 23, the particles comprise a polymer (i.e., cross-linked polyvinyl alcohol, col. 12, line 8.)

As to claim 25, the particles are biocompatible (col. 12, line 8.)

As to claims 26 and 27, the particles comprise at least in part a biological group or chemical group (i.e., immoblilzed ligand (see for example col. 12, lines 17-21.)

As to claim 31, the channel structure can be formed by selective polymerization of the coating film.

Also, neither Pourahmadi et al. nor Foster disclose the dimension of the surface length or width or thickness as claimed by Applicant (in claims 4, 5, 10 and 11), nor that the particles comprise between about 0.1% and bout 99.9 % volume of the polymer coating (claim 22), nor the size of the particle as claimed by Applicant. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, Pourahmadi et al. in view of Foster disclose the general conditions of the claim, and the ranges in dimensions as claimed by Applicant are optimum or workable ranges and thus involve only routine skill in the art according to *In re Aller.*

Response to Arguments

Applicant's arguments filed May 9, 2005 have been fully considered but they are not persuasive. Applicant asserts that neither Pourahmadi et al. nor Foster disclose a coating film which comprises particulate particles.

This is not found to be persuasive because, as indicated above, with respect to claims 1 and 21, the cross-linked polymer disclosed by Foster comprises a particulate particle imbedded in the coating film as claimed by Applicant. Applicant's specification also refers to a particulate as being of any shape or size that is appropriate to be provided in a coating film or a polymerizable composition to form a coating film. The cross-linked polymer disclosed by Foster is consistent with Applicant's disclosure of a particulate particle.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.L.

LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
07/25/05